

WHAT IS CLAIMED IS:

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5        1. An image processing device, comprising a  
memory unit having a memory region for storing images  
of at least one screens, a memory control unit for  
performing an input system operation to write image  
data to the memory unit by using a first clock and a  
first image synchronizing signal and for performing an  
output system operation to output image data read out  
from the memory unit by using a second clock and a  
10      second image synchronizing signal, a clock generating  
unit for generating said second clock, and a  
synchronizing control unit for inputting said second  
clock and for outputting said second image  
synchronizing signal,

15      wherein said synchronizing control unit generates  
a third image synchronizing signal asynchronous to said  
first image synchronizing signal by dividing said  
second clock and a fourth image synchronizing signal  
with being synchronized to said first image

20      synchronizing signal by using said second clock and  
selects one of said third image synchronizing signal  
and said fourth image synchronizing signal to output it  
as said second image synchronizing signal.

25      2. An image processing device according to claim  
1, wherein said synchronizing control unit selects one  
of said third image synchronizing signal and said

fourth image synchronizing signal according to a vertical frequency of said first image synchronizing signal and outputs it as said second image synchronizing signal.

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3. An image processing device according to claim 1, wherein said synchronizing control unit selects one of said third image synchronizing signal and said fourth image synchronizing signal according to a purpose for a use of the output image and outputs it as said second image synchronizing signal.

4. An image processing device, comprising a memory unit having a memory region for storing images of at least one screens, a memory control unit for performing an input system operation to write image data to the memory unit on by using a plurality of first clocks and a plurality of first image synchronizing signals synchronized to a plurality of input signals inputted to said plurality of input system signal processing units and for performing an output system operation to output image data read out from the memory unit by using a second clock and a second image synchronizing signal, a clock generating unit for generating said second clock, and a synchronizing control unit for inputting said second clock and for outputting said second image

synchronizing signal,

wherein said synchronizing control unit generates a third image synchronizing signal asynchronous to said first image synchronizing signals by dividing said 5 second clock and fourth image synchronizing signals with being synchronized to said first image synchronizing signals by using said second clock and selects one of said third image synchronizing signal and said fourth image synchronizing signals to output 10 it as said second image synchronizing signal.

5. An image processing device according to claim 4, wherein said synchronizing control unit selects one of said third image synchronizing signal and said 15 fourth image synchronizing signals according to a vertical frequency of said first image synchronizing signals and outputs it as said second image synchronizing signal.

20 6. An image processing device according to claim 4, wherein said synchronizing control unit selects one of said third image synchronizing signal and said 25 fourth image synchronizing signals according to a purpose for a use of the output image and outputs it as said second image synchronizing signal.

7. An image processing device according to claim

4, wherein said synchronizing control unit selects one  
of said third image synchronizing signal and said  
fourth image synchronizing signals according to  
presence or absence of a dynamic image or a proportion  
5 thereof in the plurality of input signals inputted to  
said plurality of input system signal processing units  
and outputs it as said second image synchronizing  
signal.

10 8. An image processing device according to claim  
4, wherein said synchronizing control unit selects one  
of said third image synchronizing signal and said  
fourth image synchronizing signals according to uses or  
types of said plurality of input system signals and  
15 outputs it as said second image synchronizing signal.

*Sub a)* 9. An image processing device according to one  
of claims 4 to 8, further comprising means for  
outputting a request of setting or re-setting input  
20 image signals to signal sources for inputting signals  
to said plurality of input system signal processing  
units and for outputting a request of a synchronization  
to the second image synchronizing signal to an  
arbitrary input signal source which is asynchronous to  
25 said second image synchronizing signal selected to be  
output out of said third image synchronizing signal and  
said fourth image synchronizing signals.

10. An image processing device, comprising at least one signal input units to which video signals of a plurality of systems are inputted, a memory unit having a memory region for storing images of at least 5 one screens, image processing means having at least one image display signal output units and synthesizing the video signals of said plurality of systems on said memory unit to output it to said signal output units, and control means for controlling said image processing 10 means,

wherein said control means select a preferential video signal according to image characteristic information of the video signals of said plurality of systems and change the operation of said image 15 processing means to one appropriate for the video signal of the preferential system.

11. An image processing device, comprising at least one signal input units to which video signals of 20 a plurality of systems are inputted, a memory unit having a memory region for storing images of at least one screens, at least one image display signal output units, image processing means for synthesizing the video signals of said plurality of systems on said 25 memory unit to output it to said signal output units, and control means for controlling said image processing means,

wherein said control means select a preferential video signal according to image characteristic information of the video signals of said plurality of systems and characteristic information of the image display unit connected to said signal output unit and change the operation of said image processing means to one appropriate for the video signal of the preferential system and for the image display unit connected to said signal output unit.

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12. An image processing device, comprising at least one signal input units to which video signals of a plurality of systems are inputted, a memory unit having a memory region for storing images of at least one screens, at least one image display signal output units, image processing means for synthesizing the video signals of said plurality of systems on said memory unit to output it to said signal output units, and control means for controlling said image processing means,

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wherein said control means, having communication means for outputting a request of changing image characteristics to at least one input video signals of said plurality of systems, select a preferential video signal according to image characteristic information of the video signals of said plurality of systems, change the operation of said image processing means to one

appropriate for the video signal of the preferential system, and output a request of changing image characteristics to those appropriate for the operation of said image processing means to video signals of at 5 least one systems other than the video signal of the preferential system.

13. An image processing device, comprising at least one signal input units to which video signals of 10 a plurality of systems are inputted, a memory unit having a memory region for storing images of at least one screens, at least one image display signal output units, image processing means for synthesizing the video signals of said plurality of systems on said 15 memory unit to output it to said signal output units, and control means for controlling said image processing means,

wherein said control means, having communication means for outputting a request of changing image 20 characteristics to at least one input video signals of said plurality of systems, select a preferential video signal according to image characteristic information of the video signals of said plurality of systems and characteristic information of the image display units 25 connected to said signal output units, change the operation of said image processing means to one appropriate for the video signal of the preferential

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system and the image display units connected to said  
signal output units, and output a request of changing  
image characteristics to those appropriate for the  
operation of said image processing means to video  
signals of at least one systems other than the video  
5 signals of the preferential system.

14. An image processing device, comprising at  
least one signal input units to which video signals of  
10 a plurality of systems are inputted, a memory unit  
having a memory region for storing images of at least  
one screens, at least one image display signal output  
units, image processing means for synthesizing the  
video signals of said plurality of systems on said  
15 memory unit to output it to said signal output units,  
and control means for controlling said image processing  
means,

wherein said control means select a preferential  
video signal according to arrangement conditions for a  
20 screen on which the video signals of said plurality of  
systems are output to said signal output units and  
change the operation of said image processing means to  
one appropriate for the video signal of the  
preferential system.

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15. An image processing device, comprising at  
least one signal input units to which video signals of

a plurality of systems are inputted, a memory unit having a memory region for storing images of at least one screens, at least one image display signal output units, image processing means for synthesizing the 5 video signals of said plurality of systems on said memory unit to output it to said signal output units, and control means for controlling said image processing means,

wherein said control means select a preferential 10 video signal according to image characteristic information of the video signals of said plurality of systems and arrangement conditions for a screen on which the video signals of said plurality of systems are output to said signal output units and change the 15 operation of said image processing means to one appropriate for the video signal of the preferential system.

16. An image processing device, comprising at 20 least one signal input units to which video signals of a plurality of systems are inputted, a memory unit having a memory region for storing images of at least one screens, at least one image display signal output units, image processing means for synthesizing the 25 video signals of said plurality of systems on said memory unit to output it to said signal output units, and control means for controlling said image processing

means,

wherein said control means select a preferential video signal according to image characteristic information of the video signals of said plurality of systems, arrangement conditions for a screen on which the video signals of said plurality of systems are output to said signal output units, and characteristic information of the image display units connected to said signal output units and change the operation of said image processing means connected to said signal output units to one appropriate for the video signal of the preferential system and the image display units connected to said signal output units.

15        17. An image processing device, comprising at least one signal input units to which video signals of a plurality of systems are inputted, a memory unit having a memory region for storing images of at least one screens, at least one image display signal output units, image processing means for synthesizing the video signals of said plurality of systems on said memory unit to output it to said signal output units, and control means for controlling said image processing means,

20        wherein said control means, having communication means for outputting a request of changing image characteristics to at least one input video signals of

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said plurality of systems, select a preferential video signal according to image characteristic information of the video signals of said plurality of systems and arrangement conditions for a screen on which the video signals of said plurality of systems are output to said signal output units, change the operation of said image processing means to one appropriate for the video signal of the preferential system, and output a request of changing the image characteristics to those appropriate for the operation of said image processing means to video signals of at least one systems other than the video signal of the preferential system.

18. An image processing device, comprising at least one signal input units to which video signals of a plurality of systems are inputted, a memory unit having a memory region for storing images of at least one screens, at least one image display signal output units, image processing means for synthesizing the video signals of said plurality of systems on said memory unit to output it to said signal output units, and control means for controlling said image processing means,

wherein said control means, having communication means for outputting a request of changing image characteristics to at least one input video signals of said plurality of systems, select a preferential video

signal according to image characteristic information of the video signals of said plurality of systems, arrangement conditions for a screen on which the video signals of said plurality of systems are output to said signal output units, and characteristic information of image display units connected to said signal output units, change the operation of said image processing means to one appropriate for the video signal of the preferential system and the image display units connected to said signal output units, and output a request of changing the image characteristics to those appropriate for the operation of said image processing means to video signals of at least one systems other than the video signal of the preferential system.

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*Sub a 2* 19. An image processing device according to one of claims 10 to 18, wherein said control means comprise storing means for storing contents of the operation of said image processing means for which said preferential input video signal is selected and changed.

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*Sub a 2* 20. An image processing device according to one of claims 10 to 18, wherein the optimized operation of said image processing means is for an update cycle time of display screens of the display units in said control means.

*5 w a 2* 21. An image processing device according to one of claims 10 to 13 and claims 15 to 18, wherein said image characteristics information referred to for selecting the preferential input video signal is update 5 cycle time information of the input image and the optimized operation of said image processing means is for an update cycle time of display screens of the display units in said control means.

10 22. An image processing device according to one of claims 10 to 13 and claims 15 to 18, wherein said image characteristics information referred to for selecting the preferential input video signal is dynamic image or still image judgment information of 15 the input image and the optimized operation of said image processing means is for an update cycle time of display screens of the display units in said control means.

20 *5 w a 2* 23. An image processing device according to one of claims 10 to 13 and claims 15 to 18, wherein said image characteristics information referred to for selecting the preferential input video signal is use or 25 type information of the input image and the optimized operation of said image processing means is for an update cycle time of display screens of the display units in said control means.

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24. An image processing device according to one of claims 10 to 13 and claims 15 to 18, wherein said image characteristics information referred to for selecting the preferential input video signal is resolution information of the input image and the optimized operation of said image processing means is for a resolution of display screens of the display units in said control means.

10 25. An image processing device according to one of claims 10 to 13 and claims 15 to 18, wherein said image characteristics information referred to for selecting the preferential input video signal is gamma characteristic information of the input image and the optimized operation of said image processing means is a gamma correction on display elements of the display units in said control means.

20 26. An image processing device according to one of claims 10 to 13 and claims 15 to 18, wherein said image characteristics information referred to for selecting the preferential input video signal is color information of the input image and the optimized operation of said image processing means is a color correction for the display units in said control means.

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27. An image processing device according to one

*sub a27* ~~of claims 10 to 13 and claims 15 to 18, wherein said image characteristics information referred to for selecting the preferential input video signal is brightness and contrast information of the input image and the optimized operation of said image processing means is brightness and contrast corrections for the display elements of the display units in said control means.~~

10        28. An image processing device, comprising input system image processing units for adjusting image qualities of a plurality of input systems, a memory unit having a memory region for storing images of at least one screens, a memory control unit for performing a write or readout operation of image data to or from the memory unit and for synthesizing images of a plurality of input systems to a single screen to output the signal, an output system image processing unit for adjusting image quality of said synthesized signal and for outputting it as an image display output, and an image quality control unit for controlling said input system image processing units and said output system image processing unit and for outputting the image display signal,

25        wherein said image quality control means, having correction characteristics for images of said plurality of input systems and a correction characteristic for a

display characteristic of the image display unit connected to the image quality control unit, select one of the correction characteristics for the images of said plurality of input systems and convert it to a 5 correction characteristic synthesized with the correction characteristic for the display characteristic of said image display unit for batch-processing in said output system image processing unit.

10 29. An image processing device according to claim 28, wherein said image quality control unit selects one of the correction characteristics for the images of said plurality of input systems by using image quality information sampled in said plurality of 15 input system image processing units and converts it to a correction characteristic synthesized with the correction characteristic for the display characteristic of said image display unit for batch-processing in said output system image processing unit.

20 30. An image processing device according to claim 28, wherein said image quality control unit selects one of the correction characteristics for the images of said plurality of input systems according to 25 a purpose for a use of the output image and converts it to a correction characteristic synthesized with the correction characteristic for the display

characteristic of said image display unit for batch-processing in said output system image processing unit.

31. An image processing device according to  
5 claim 28, wherein said image quality control unit  
selects one of the correction characteristics for the  
images of said plurality of input systems according to  
uses or types of said plurality of the input system  
signals and converts it to a correction characteristic  
10 synthesized with the correction characteristic for the  
display characteristic of said image display unit for  
batch-processing in said output system image processing  
unit.

15 *sub a3* 32. An image processing device according to one  
of claims 28 to 31, further comprising means for  
outputting a request of setting or re-setting input  
image signals to signal sources for inputting signals  
to said plurality of input system signal processing  
20 units and means for outputting a request of changing  
characteristics of the input image appropriate for said  
synthesized correction characteristic to an arbitrary  
input signal source which has not been selected for the  
synthesization with the correction characteristic for  
25 the display characteristic of said image display unit  
out of the correction characteristics for the images of  
said plurality of input systems.

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33. An image processing device according to one of claims 1 to 32, wherein the image processing device is used as a signal processing unit of an image display device.

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34. An image processing device according to one of claims 1 to 32, wherein the image processing device is used as a signal processing unit for an image display unit of a computer.

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35. An image processing device according to one of claims 1 to 32, wherein the image processing device is used as a signal processing unit for an image display unit of a digital TV.

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36. An image processing device according to one of claims 33 to 35, wherein said image display device has a liquid crystal display unit.

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37. An image processing device according to one of claims 33 to 35, wherein said image display device has a display unit of a plasma display or an electric-charge emission type device.

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38. An image processing device according to one of claims 33 to 35, wherein said image display device has a display unit of a reflection type device which

displays an image by reflecting light.

*Sub a37*

39. A computer readable medium on which a  
program is recorded for a computer to execute the  
operations of the image processing device according to  
one of claims 1 to 38.

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